STUDY OF VARIOUS HISTORICAL RAPIERS
FROM THE END OF THE 16th CENTURY TO THE BEGINNING OF THE 17th CENTURY

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THE practice of late Renaissance rapier fencing in HEMA (Historical European Martial Arts) is often, because of the surviving fighting manuals, split in two schools: Italian fencing school and Spanish fencing school, both of these having quite a different understanding of the rapier fighting. Whichever way of fencing you choose to practice, there is always a question that everyone must ask after a time: what would be the perfect rapier to get according to the sources? As a matter of fact, and as opposite to mostly previous fighting manuals, "ideal" weapon dimensions are regularly specified by the late Renaissance masters. It has to be noted that the average "spanish" dimensions are often different from those specified by italian teachers. According to a fencing master (Gérard Thibault d'Anvers, *Académie de l'Espée*, 1630), the italian rapiers would not be recommanded for a good practice of the spanish school of rapier fencing.

So, is there really such a difference between the historical spanish and italian rapiers? What could be the length of both of them? And, more important, what would be the "perfect" rapier simulator to use to have the best italian or spanish practice?

I/ A proportions story

Reading the historical treatises, we can see that no precise length (expressed in an unit of measure) used to tell a weapon length — as opposed to some highly specialized swords described by Fiore de'i Liberi, for example. Every master talking about the rapier dimensions — spanish or italian — uses in fact the human body proportions to size the sword. This is actually not as surprising, as all the units of measure of the time were taken from the human body: palm, inches, feet, and so on. To estimate the correct length of the rapier, you must put the tip on the floor and hold it vertically, standing barefoot just next to it. Then, two ways can be used :

— Some spanish masters (Pacheco de Narváez, Thibault d'Anvers) advise to get a rapier whose blade goes from ground to navel ;
— Some italian masters (Capo Ferro, Alfieri) call for a rapier full length (including pommel and potentially peen block) going from ground to the armpit. To my knowledge, no other italian master gave precisions concerning this ideal length, but the woodcuts from Giganti's and Fabris' treatises seem to use the same kind of proportions.

The italian variant seems then to be a slightly longer than the spanish. The handle length being always very close on historical examples and could be roundly estimated to 15 cm, so the only parameter having a key influence on total length is the blade length. I will start this article with a study of this data on an historical pieces sample, then we will do the same on other important parameters — weight, point of balance, maximum blade width and distal taper. But first we can ask ourselves a question: can we actually distinguish, on our statistical sample, italian swords and spanish swords ?

II/ Which provenance ?

The answer is unfortunately no — it is indeed totally impossible to surely identify a weapon used for a specific type of fencing. We should have known the rapiers dimensions, but also its owner's height and his favourite type of fencing back in the time, which is of course not possible. In addition, the spanish and italian schools of fencing were not limited to this two countries: the spanish school was practiced as far as Flanders, which were part of the Kingdom of Spain, with Thibault d'Anvers, and some italian rapier treatises were translated several times in german and french languages.

Moreover, the rapiers' origin itself is, most of the time, composite. In effect, a man wishing a high quality sword should have chosen a blade made in some reknown cities of this era (Solingen and Passau in Germany, Toledo in Spain), and asked a local or famous craftsman to mount a handle on it. We actually have some exemple of rapiers owned by german men, with spanish blades and italian guards.

But it remains true that, even with a beautiful and delicately ornated guard, those rapiers have fully functional and dangerous blades. This is why I decided to choose the historical examples blade length as my main parameter, and not the total length — and why I decided to not favour any geographical origin in particular.

However, these swords were chosen with a particular factor: they are all estimated to a precise historical period, which goes from the end of the 16th century to the beginning of the 17th, time lapse of about 40 years long going from approximatively 1575 to 1615.

III/ Sources

The historical rapiers of which I was able to access measurements essentially come from some museums. They are listed here:

- The *Wallace Collection Museum* (London, UK);
- The *Metropolitan Museum of Art* (New York, USA);
- The *Staatliche Kunstsammlungen* (Dresden, Germany);
- The *Hofjagd-* and *Rustkämmer* (Vienna, Austria), through the article *A Comparison of Late 16th to Early 17th Century Rapiers with Modern Reproductions* [Fortner and Schrattenecker] (cf. bibliography);
- The *Musée Renaissance* (Écouen, France);
- The *Musée de l'Histoire du Fer* (Jarville-la-Malgrange, France).

The last specimens were found on two auction houses websites: the Fischer Gallery (Switzerland) and Historica Arma (Germany).
All datas were compiled in the annexed tables. I must specify that all these rapiers were not personnally measured by myself, but by the museums staffs — with the exception of the sword coming from the *Musée de l'Histoire du Fer*. I had to use the datas available in existing sources, books or websites.

IV/ Blade length

According to the existing documents, the blade length were measured from crossguard to the tip, including the ricasso. Obviously, in some cases, the lack of total length could maintain an ambiguity on this length (is the ricasso included or not?), but I tried to suppress this doubts using some reliables sources (cf. bibliography). When the total length can be found, a simple subtraction between this length and the blade length can tell us if the handle length is close to the average 15cm.

Having brought together 111 rapiers as our sample, all coming from the adequate historical period, I decided to put all their blade length on a single histogram. This chart was constituted using various length categories in order to better illustrate the frequency of the different blade sizes, and to get a more meaningful graph.

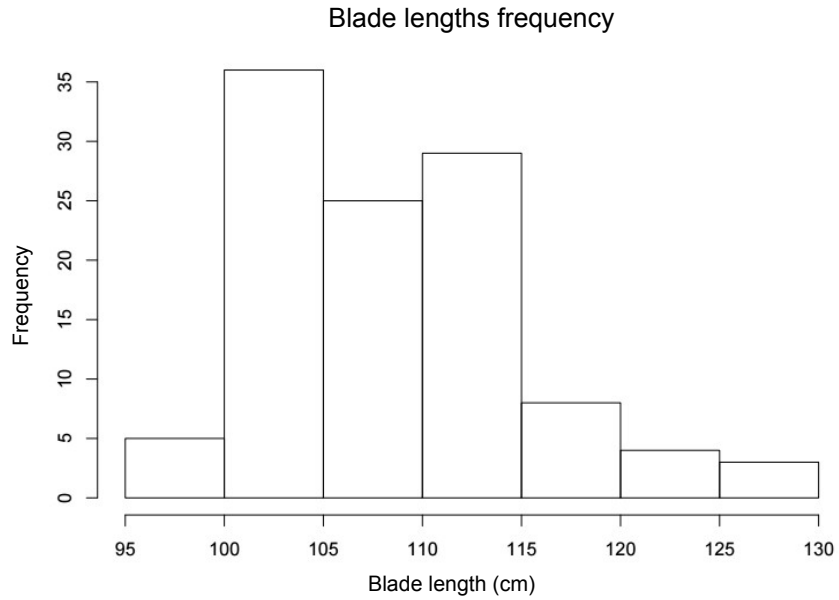

Figure 1 — Histogram of the blade sizes repartition.
Histogram: Vincent Le Chevalier

The extreme values of our sample are the following:

- Minimum length: 99,6cm
- Maximum length: 126,4cm

So we have a 26,8cm difference between the longest and the shortest blades.

In view of the two main school of fencing at this time, each of us offering us different blade lengths (a "long" and a "short"), we could have expected the presence of two strongly represented blade lengths — and so are they figured by two peaks. However, it is interesting to note that those peaks are not really separated, and that it seems to have a great number of intermediate lengths.
A possible hypothesis to explain this fact is to think at human proportions. Human beings are all of a different height, and, even at this time, there were small and tall people. If a majority of the sword owner did buy a sword according to their own body size, so the "short" rapiers of the taller persons were in fact as long as the "long" version made for smaller people. Factually, the size difference between the "long" and "short" versions is less than 10cm in the great majority of the cases.
Another possibility would be to say that, back in the time, the craftsmen did not have industrial machinery to be as precise as now. All the blades were made by hand and perforce showed some length variations.

Likewise, maybe some of these swords were shortened due to some damages on the tip.
At last, we cannot exclude the possibility that those advises may were not followed by the majority of the sword owners, and that they may have touched a tiny number of persons ; and that a great deal of the fencers probably chose their rapier according to their personal taste.

We can note that the graph distribution is not symmetrical, indeed there seems to be a number of very long rapier blades after the second peak (more than 115cm long), thus no rapier blade shorter than 98cm.

There is anyway some historical rapiers with far longer blades. The sword E. Cl. 11814 (Musée Renaissance d'Écouen), of german origin and estimated to the last quarter of the 16th century, has a full length of 149cm. The photography seems to confirm this very long size: in effect, the handle length is about $^{1}/_{10}{}^{th}$ of the total length, so an average 15cm for a 150cm length.
Such a sword would have a blade length of ca. 134cm, in which case it would be one of the longest rapiers ever built. Not having the measured blade length, I didn't include it in my figure 1 graph.

Figure 2: Rapier no. E. Cl. 11814 of the Musée Renaissance d'Écouen.
Picture: Musée Renaissance d'Écouen.

We could as well ask ourselves what would actually be the smallest possible length for a rapier blade. In our statistical sample, the minimal length is 99,6cm, but there could be smaller blades.

We must however remember that the blade length seems to have more significance in the spanish treatises that in the italian ones. To my knowledge, only two italian masters approach the matter: Ridolfo Capo Ferro and Francesco Alfieri, the second of them having published his book in 1640 — and not being in the historical period that we chose in this article. The others, even if a similar blade lenth is showed in their treatises pictures, don't say a word on the subject. This may suggest that these masters didn't put so much value in this parameter, as opposed to the spanish masters ; and that a good fencer with a shorter blade could easily be as effective as a fencer with a longer blade.

V/ Weight

These swords weight is an equally interesting parameter to observe. Unfortunately, weight is less mentioned that blade length: I only found this data for 106 rapiers. Figure 3 shows the swords weight distribution in our sample, using the same principle that on our previous graph:

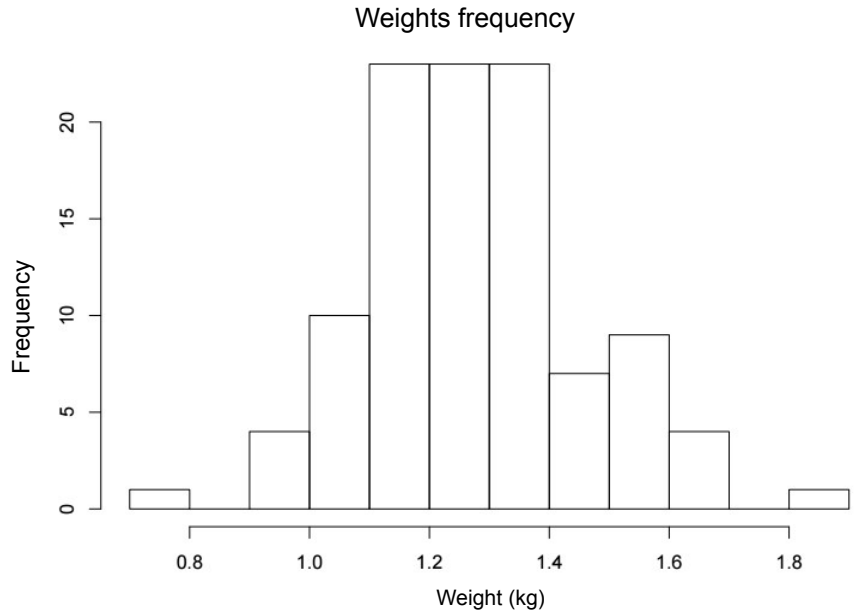

Figure 3 — Histogram of the weight repartition.
Histogram: Vincent Le Chevalier

As opposed to the blade length, the weight frequency appears substancially more symetric, and displays a profile comparable to a bell curve — the most represented masses going from 1100 to 1400 grams. We can also notice some rapiers of 1700 grams and more, which is extremely heavy for a one-handed sword. We can note the presence of two extremes dramatically separed from the global group, that are 794 and 1858 grams heavy. There seems to be a very slight increase of the frequency of the weights going from 1500 to 1600 grams regarding categories immediately adjacent, but it is so low that it could be a statistical artefact.

An interesting idea is to compare the two preceding parameters — weight and blade length. We obtain the following chart:

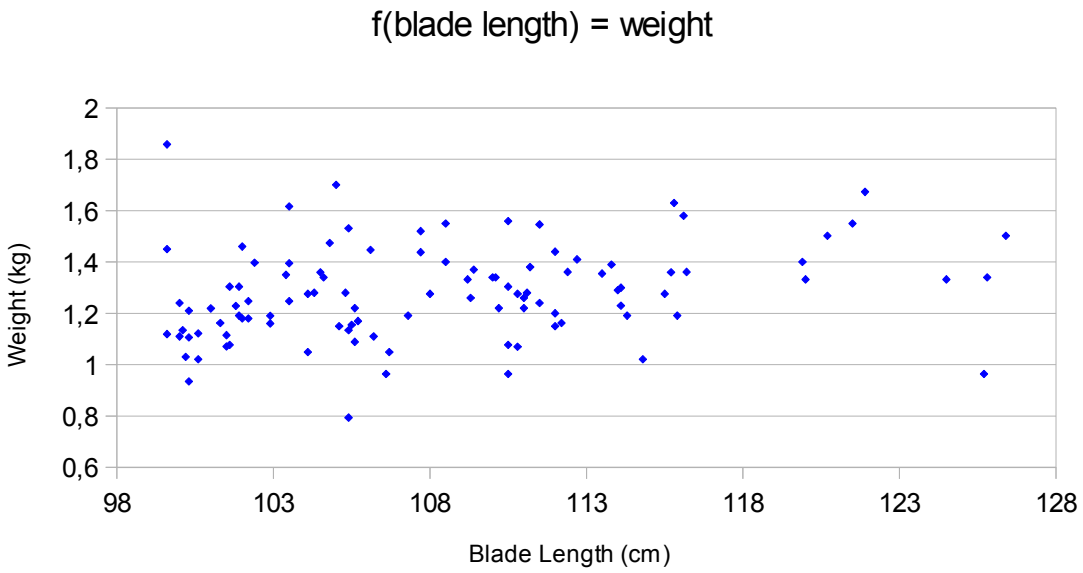

Figure 4

This graph seems to demonstrate that there is no connection between the blade length and the weapon weight. Some rapiers are shorts and heavy, others are long but light. However, the majority are in the area coming from 1100 to 1400 grams, as precedently showed in figure 3. It is interesting to note that the rapiers are more represented in the heavier side of this area.

VI/ Other parameters

a. Blade width

There are of course other interesting datas to exploit. The maximal blade width (at junction of the ricasso and the forte) is often indicated on the Wallace Collection rapiers, and is sometimes mentioned in a few other examples. The figure 5 just below, including 47 swords, shows us the blade widths classified by increasing order:

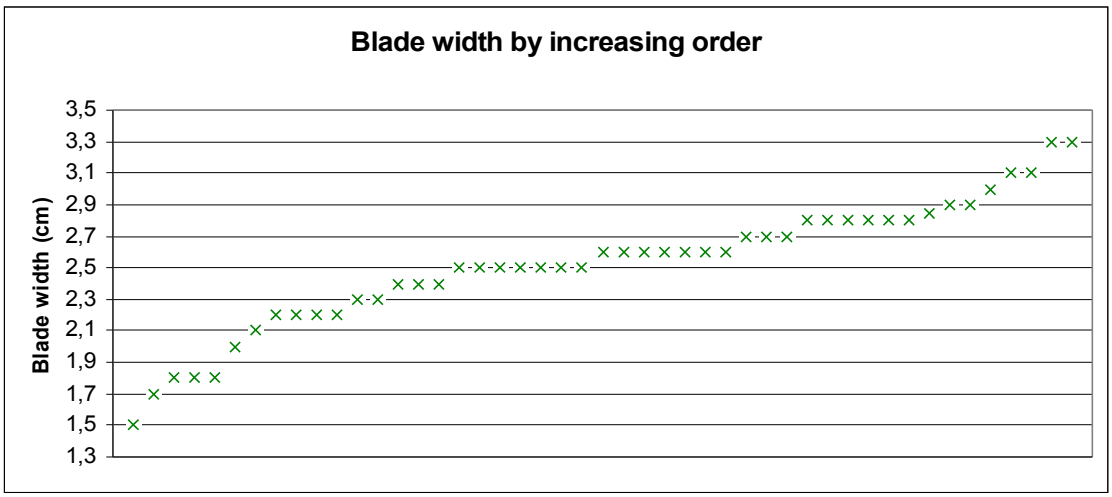

Figure 5

No actual pattern seems to appear on this graph — that being said, it is actually difficult to interpret, because of the small number of weapons and the measurement uncertainties. We can nevertheless remember that the average blade width is 2,58cm, with a standard deviation of 0,4cm.

b. Distal taper

Distal taper is an interesting parameter to study as well. Unfortunately there are only a few swords on which this data has been recorded. That is the case on seven rapiers from the Hofjagd- und Rustkämmer of Vienna, which are displayed in the article *A Comparison of Late 16th to Early 17th Century Rapiers with Modern Reproductions*, by Fortner and Schrattenecker (cf. sources). Amongst these seven swords I decided to select only six of them in parts IV and V of this present study, excluding the reference A1248. In effect, this rapier might have been shortened. However, I decided to include it in the following distal taper graph. In the article, the blade thickness of those seven rapier was measured every ten centimeters:

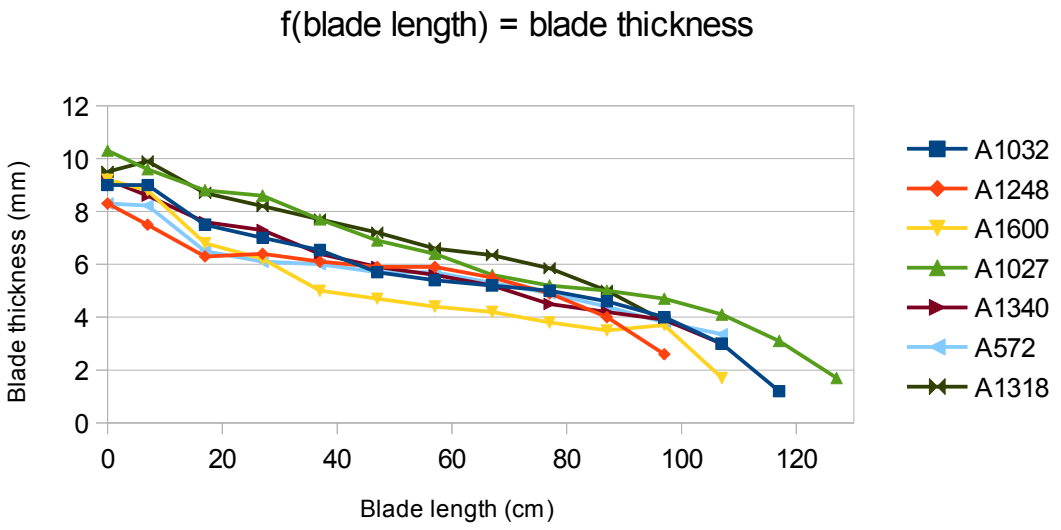

Figure 6

We can see on these curves that the ricasso, which is extremely thick (8 to 10mm), has nearly no taper, but just after the blade thickness narrows abruptly on the ten to fifteen first centimeters of the forte. The following figure displays the average distal tapers on these rapiers, to have a better view of it:

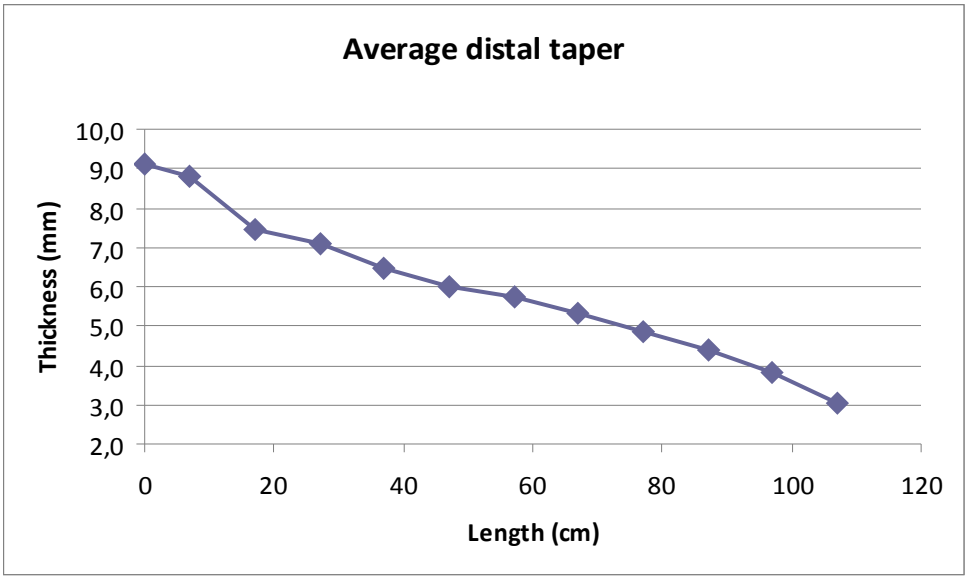

Figure 7

After this short blade portion, the distal taper becomes almost linear. On these ten first centimeters of the forte, the slope of the curve is three times greater than on the rest of the blade, showing us the significance of this taper.

c. *Point of balance*

Another frequently quoted data is the sword point of balance. However, on the model of the previouslay said parameters, the point of balance is rarely seen in the museums descriptions. I have succeeded in finding 33 of them, but I included some of later rapiers — as we can observe only a few variations on the historical rapiers of different eras. We can see them on the following figure:

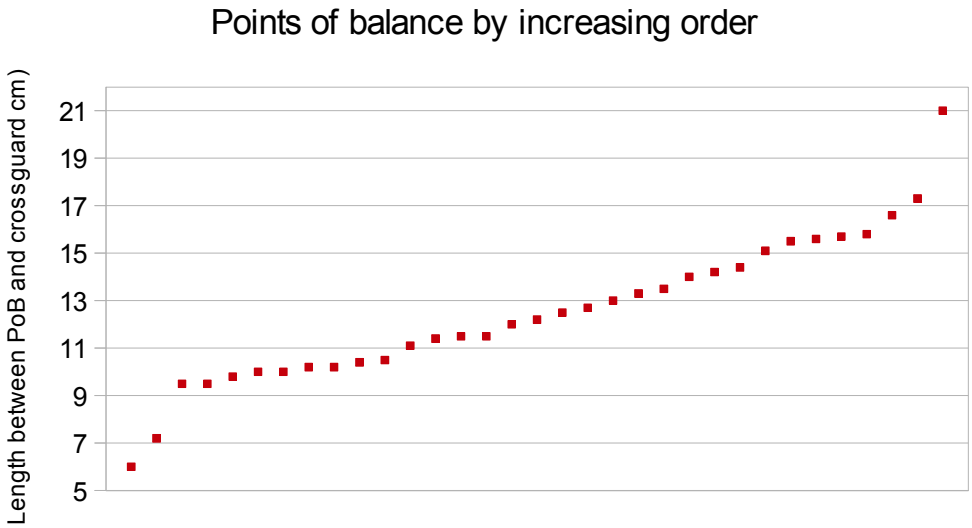

Figure 8

According to this graph, we can note than the overwhelming majority of the measured points of balance are included on a range going from 9 to 17cm from crossguard (including three extremes: two at less than 9cm, one at more than 17cm). This information seems to contradict the idea that the point of balance has to be very close to crossguard to increase the tip precision.
We must remember that those points of balance are proportionnaly closer to crossguard (between $\frac{1}{8}$ and $\frac{1}{10}$ of total blade length) than on many older swords, where it can be at $\frac{1}{6}$ or even $\frac{1}{5}$ of the total blade length.

It is interesting to note that the point of balance, in the majority of the cases, is included in the blade part where we can actually see the more pronounced distal taper. After that point, the taper is less important, and becomes linear, to achieve 1mm lost in thickness on every 200mm long section of the blade, up to the tip. This distal taper, added to the profile taper (which can also be pretty strong, as on the Wallace Collection A605), and potentially some cross-section changes (often from hexagonal to flattened diamond), can give us an idea of the weight repartition on the blade on an original weapon of this kind, and can explain the fact, sometimes misunderstood, that in spite of an important weight for a one-handed sword and a distant point of balance, the tip still stays handy and precise. The fact that the blade is actually far longer than older medieval swords mechanically rejects the point of balance at a greater distance from crossguard.

We must however recall that these last datas, due to their very limited number, must be taken with a grain of salt. This article will of course be expanded with the addition of supplementary data in the future.

VII/ How to size your own rapier replica?

Looking at the study of these various parameters, we can see that the great majority of the available rapier replicas, designed for fencing, are in fact not that similar in their properties to the historical weapons. In most cases, particularly in the case of the less expensive simulators, large concessions are made to increase sparring safety and the fencer comfort (be quicker and decrease tiredness) : masses greatly reduced, shortened blades, points of balance closer to crossguard, longer grips, and so on.
We can henceforth think at the way to create and design a personnalized simulator for each one, which would be more respectful to the original rapiers, their dimensions and handling.

Of course, the first element to take into account, and probably the most important, is the blade length. As a critical factor for the fencing practice, it seems to often be scaled down. This length can easily be experimentally determined following the historical masters indications. The spanish school of fencing practitioners could take measure of the distance separating their belly button to the floor, standing and having removed his shoes. The italian rapier practitioners could as well measure the distance separating their armpit from the floor, then removing handle length (about 15cm).
A very simple way to get an approximation of the "italian" blade length is to take the ⅔ of your total height. In my personnal case, being about 169cm tall, this estimation gives me a length of 112,7cm, which is actually pretty close to the experimental length of about 111,5cm, determined using the distance going from the floor to my armpit, and removing 15 to 16cm.

A quick calculation gave me two factors — one for each one of the two major schools of fencing. You can use the following formulae :

- Total height of the fencer × 0,61 for the spanish school of fencing.
- Total height of the fencer × 0,66 for the italian school of fencing.

An example with my personal case :

— 169 × 0,61 = 103,1 cm blade
— 169 × 0,66 = 111,5 cm blade

Of course this factor must be used to get an approximation. The very tall persons in particular could see some variations, compared to the obtention of the experimental measures. I have tested these factors on different sized people, but a feedback of several other persons would gave us more precision.

Some spanish sources, like Ettenhard or Narváez mention that the rapier blade must be ¾ *vara*, or spanish yard (about 84cm long). According to them, the average man height is 2 *varas*, so using proportions the rapier blade must have been ⅝ of the man height, i.e. a factor of about 0,625, which is very close to the one experimentally calculated.

A second essential element is grip sizing. This part of the weapon is frequently underestimated in modern construction of rapier simulators, and very often the grip length is far too long for a good use of the rapier. For example, the pommel+grip set length on the Regenyei rapier waster is 17cm: on historical rapiers it rarely exceeds 14 to 15cm.
The handle length will result in strong differences in the sword grip. The standard grip, looking at the Spaniards and Italians, is made inserting the index finger in the pas-d'âne, around the ricasso; the pommel bulb is resting on the hand hypothenar eminence in the waiting posture. This grip allows an excellent blade control and, above all, a tip control: in effect, the pinky and ring fingers (and, on the opposite side, the hypothenar eminence) only are holding the sword, as the three last fingers (thumb, index and middle fingers) are used to lead the blade. The following figure shows two different ways to hold the rapier. The left picture depicts the usual way to hold the weapon, the right pictures shows the precedently described grip.

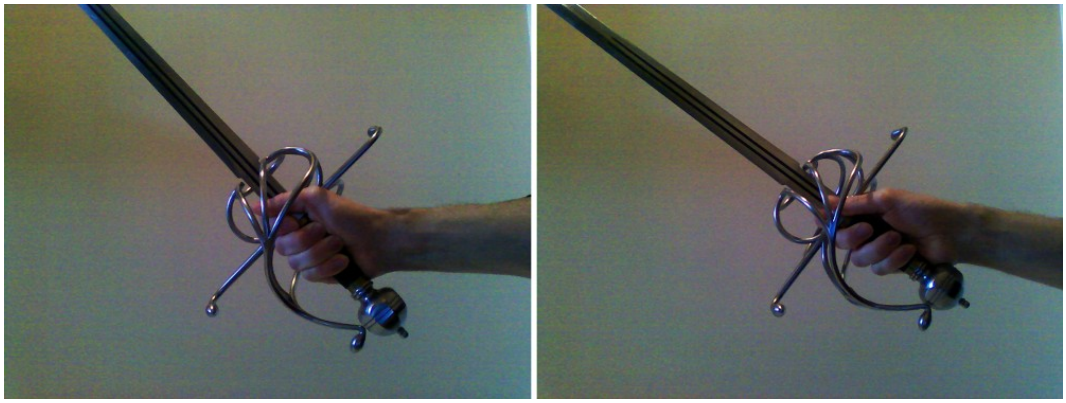

Figure 9 *(photography: Guillaume Vauthier)*

This grip (on the left side of figure 9) is of course extremely difficult to use on a long handle. Ideally, we should ask for a slight shortening of the handle, to allow a better use of the sword. Most of the time, the "useful length" of the grip (going from the quillons to the pommel bulb) should not exceed 9 to 10cm for the largest hands, and could reduce to less than 8cm for the smallest ones.

There are also other ways to grip the sword. For example, the pommel and the final part of the grip can rest on the thenar eminence (thumb base) when thrusting; this allows to put the blade in extension of the arm without bending the wrist, avoiding possible wrist injuries. The grip can also be modified to a so-called "hammer grip" to give a cut, or other types of grip to perform other actions. The most important thing to remember is that there is not only one way to grip the sword, as it changes to adapt different types of situa-

tion in a fight; contrary to modern fencing, where the said "pistol grip" freezes the hand in one particular position. Your ideal rapier handle must allow you to change your grip, and be as comfortable as possible in each different way to handle it, depending on the context.

The other properties, looking at the different datas recolted and analysed precedently, can be a little more general. The sword point of balance should be included in an area going from 10 to 15cm from crossguard (i.e. at $\frac{1}{8}$ to $\frac{1}{10}$ of the blade length). The blade, at the beginning of the forte, could be 2,5 to 3cm wide. The rapier weight can be included in an area from 1,2 to 1,4 kg, depending on the owner's tastes. The ricasso should be pretty thick (about 9mm): this thickness should taper to 7,5mm in the forte first 10cm (after the ricasso), and then have a linear taper, losing 1mm thick every 20cm long approximatively — having a final thickness of about 3mm at the tip.

VIII/ Conclusion

As a conclusion, we can tell that this sample, despite being quite limited, can teach us some very instructive elements. In my personnal experience, I had the opportunity to manipulate a few rapier simulators, which looked almost exactly like historical weapons but had different physical properties, on varied parameters as blade length and thickness, handle length or total weight.

We must however remind that the results of this small survey must be taken with a grain of salt because of, notably, the sample size or the measuring uncertainties from the museums staffs. Of course, this article is not fixed in time — I hope to have the opportunity to get other dimensions and datas, and collect them myself by measuring some historical pieces. I would call on those that have measurements on other historical rapiers to contact me to transmit them. The more we will obtain historical rapiers dimensions, the more reliable the results will be.

SOURCES

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ANNEX

Historical rapiers used in this survey

Wallace Collection

Ref. no.	Tot. L (cm)	Blade L (cm)	Blade w (cm)	Weight (kg)	Hist. Per.
A533		105,3	2,4	1,28	1580-1600
A540		110,8	2,3	1,07	1570-1600
A542		100,2	2,7	1,03	1610
A544	127,6	112	2,85	1,2	1580-1600
A555		107,7	3	1,52	1610
A556		110,2	2,2	1,22	1610
A557		121,5	2,6	1,55	1610
A559		109,4	2,4	1,37	1610-1620
A563	116,2	99,6	2,2	1,45	1610-1620
A564	125,7	111,2	2,5	1,38	1610
A565		100,3	2,3	1,21	1610-1620
A566		113,8	2,4	1,39	1610-1620
A567	127,3	110	2,8	1,34	1610-1630
A568	118,4	101,5	1,7	1,115	1610-1620
A569	120,4	105,5	2	1,155	1590
A571		112	1,8	1,15	1590-1600
A572	127,6	111,5	2,8	1,24	1590-1600
A573		114,1	2,6	1,23	1610
A576	117,9	103,5	2,5	1,395	1570-1580
A583	119,3	103,4	1,8	1,35	1600
A588	132	116,1	2,8	1,58	1570-1580
A589	117,4	100	2,8	1,11	1610
A591		105,1	2,5	1,15	1580
A592		109,3	2,5	1,26	1610
A596	130,6	114	3,3	1,29	1605-1615
A597	128,1	111,1	2,5	1,28	1605-1615
A608	131,4	114,1	2,8	1,3	1580-1621
A613		102	2,5	1,18	1610
A615	116,5	102,2	2,6	1,18	1580-1620
A616		106,2	2,5	1,11	1580-1620
A618		104,6	2,9	1,34	1595-1610
A619	136,3	119,9	2,6	1,4	1590-1620
A620	123,1	105,7	2,2	1,17	1585-1610
A621		108,5	3,1	1,4	1585-1620
A625		112,7	3,1	1,41	1600-1615
A627		113,5	2,2	1,355	1600-1620
A629	127	111	2,6	1,22	1610-1620
A630	122,2	104,5	2,9	1,36	1600-1610
A634	116,8	100	2,7	1,24	1600-1620

Ref. no.	Tot. L (cm)	Blade L (cm)	Weight (kg)	Hist. Per.
04.3.10	118,1	101,6	1,077	1610
04.3.11	129,5	114,8	1,021	1610
04.3.12	121	105,4	0,794	1600-1610
04.3.20	116,2	100,6	1,021	1580
04.3.24	120	103,5	1,616	1580-1590
04.3.25	122,9	106,7	1,049	1600
04.3.279	115,6	100,3	1,106	1600-1610
04.3.281	117,2	101,3	1,162	1570
04.3.31	126,1	110,5	0,964	1600-1620
04.3.32	130,8	115,5	1,276	1580
04.3.8	126,7	110,5	1,304	1590
04.3.9	127,6	110,5	1,559	1600
11.89.1	123,3	107,3	1,191	1580
11.89.4	116,8	101,9	1,191	1580
14.25.1001	130,5	115,9	1,191	1600
14.25.1033	137,8	121,9	1,673	1580-1600
14.25.1034	132,1	116,2	1,361	1580-1600
14.25.1035	142,9	126,4	1,502	1575-1600
14.25.1036	125,1	110,8	1,276	1580-1600
14.25.1051	124,8	109,2	1,332	1580-1600
14.25.1052	115,9	102,9	1,16	1580-1590
14.25.1053	127,3	112,4	1,361	1600
14.25.1054	117,8	100,1	1,134	1600
14.25.1067	120,9	105,4	1,134	1600
14.25.1133	116,8	101	1,219	1580
14.25.1135	118,1	104,1	1,049	1610
14.25.1136	116,8	101,6	1,304	1580-1590
14.25.1162	118,9	101,9	1,304	1580
14.25.1167	115,6	100,3	0,935	1590
14.25.1179	132,4	114,3	1,191	1575-1590
14.25.1184	133,7	120	1,332	1590
14.25.1185	142,9	125,7	0,964	1600
14.25.1186	135,3	120,7	1,502	1575-1580
14.25.1187	140,3	124,5	1,332	1580-1590
14.25.1194	120	104,1	1,276	1600
14.25.1200	122,2	105,4	1,531	1610-1620
14.25.1201	127	112,2	1,162	1600
14.25.1202	124,9	106,6	0,964	1600
14.25.991	123,8	110,5	1,077	1600
1970.77	121,9	104,8	1,474	1606
1973.27.3	119,5	102,9	1,19	1600-1620
1973.27.5	120,2	104,1	1,276	1610-1620
2016.310	124,5	102,2	1,247	1600-1610
28.100.3	121,9	106,1	1,4	1600-1620
28.100.3	121,9	106,1	1,447	1600-1620
29.157.2	120,2	103,5	1,247	1610-1620
32.130.4a	117,1	101		1600
40.135.1	123,2	108	1,276	1570-1580

Staatliche Kunstsammlungen Dresden

Ref. no.	Tot. L (cm)	Blade L (cm)	Weight (kg)	Hist. Per.
VI 0190	127	112	1,44	1600
VI 0431	117,1	99,6	1,119	1604
VI 0433	123,6	105,6	1,089	1606
VI 0404	127,3	111,5	1,546	1583
VI 0419	119,6	101,8	1,229	1610
VI 0413	120,6	104,3	1,28	1575
VI 0430	123,8	107,7	1,438	1605
VI 0399	121	105	1,7	1580-1590
VI 0232	119	102	1,46	1610
VI 0344	114,5	99,6	1,858	1600
VI 0370	118	102,4	1,397	1600
VI 0432.01	124,7	108,5	1,55	1600

Hofjagd- & Rustkämmer

Ref. no.	Tot. L (cm)	Blade L (cm)	Blade w (cm)	Weight (kg)	Hist. Per.
A1032	130,7	115,8	2,6	1,63	1600-1610
A1027	140,5	125,8	1,5	1,34	1613
A1318	129,6	115,7	2,7	1,36	1600-1610
A1340	124,2	111	2,1	1,26	1590
A1600	124,3	110,1	1,8	1,34	1600-1610
A572	119,8	105,6	2,6	1,22	1600-1610

Musée Renaissance

Ref. no.	Tot. L (cm)	Blade L (cm)	Hist. Per.
E.Cl. 9459	131,0	115,0	1600
E.Cl. 11826	122,5	109	1575-1600

Musée de l'Histoire du Fer

Ref. no.	Tot. L (cm)	Blade L (cm)	Blade w (cm)	Weight (kg)	Hist. Per.
99-16-2	115,9	100,6	3,3	1,122	1590-1600

Fischer Kunst- und Antiquitätenauktionen

Ref. no.	Tot. L (cm)	Blade L (cm)	Hist. Per.
A399-46	125,5	111,2	1600
A399-101	123	109,2	1610

Historica Arma

Ref. no.	Tot. L (cm)	Blade L (cm)	Blade w (cm)	Weight (kg)	Hist. Per.
Historica-A	117	101,5	2,8	1,071	1600